CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512

BALDWIN HILLS ENERGY FACILITY NO.1 (01-EP-11) ALTERNATIVES ANALYSIS

INTRODUCTION

Staff has conducted an analysis of alternatives to the Baldwin Hills Energy Facility to provide the Energy Commission and the South Coast Air Quality Management District (SCAQMD) with a reasonable range of feasible alternatives that could substantially reduce or avoid any potentially significant adverse impacts of the proposed project. This section reviews the proposed project's potential to create significant impacts presented in the Staff Assessment and analyzes technology alternatives and alternative sites that may reduce or avoiding significant impacts. Alternatives were developed in response to information provided by Energy Commission staff and staffs of other agencies.

This project is being considered outside of the Energy Commission's normal power plant permitting process. Under Public Resources Code Section 25705, if the legislature or the Governor declares a state of energy emergency, the Commission has emergency authority to order the construction and use of generating facilities under terms and conditions it specifies to protect the public interest. This authority can be invoked only if the Legislature or Governor declares a state of emergency and the Commission determines that all reasonable conservation, allocation, and service restriction measures may not alleviate an energy supply emergency.

Governor Gray Davis declared a state of emergency on January 17, 2001. On February 8 and March 7, 2001, the Governor issued several executive orders and declared that all reasonable conservation, allocation, and service restriction measures may not alleviate an energy supply emergency.

In Executive Order D-26-01, and Executive Order D-28-01 the Governor ordered the Energy Commission to expedite the processing of applications for peaking and renewable power plants that can be on line by September 30, 2001. The Governor also declared that these projects are emergency projects under Public Resources Code section 21080(b)(4), and are thereby exempt from the requirements of the California Environmental Quality Act (CEQA). A summary of the emergency permitting process, including the proposed schedule, and a checklist showing the information required in an application, can be found on the web at: http://www.energy.ca.gov/sitingcases/peakers/documents/index.html.

Staff typically conduct an analysis of alternatives to proposed power plants based on the requirements of the Warren-Alquist Act and CEQA. Because this project is being reviewed as an emergency project under both acts, no alternatives analysis was included in the Staff Assessment. In a recent letter to the US Environmental Protection

Agency (US EPA), SCAQMD has noted that one requirement of Title V of the federal Clean Air Act is:

> "an analysis of alternative sites, sizes, production processes, and environmental control techniques … [that] demonstrates that benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location, construction, or modification." (Clean Air Act, section 172(c)(5)).

SCAQMD has also noted that its rules state that project exempt from CEQA do not require an alternatives analysis. The district has requested direction from the US EPA as to whether this rule appropriately applies to a project exempt from CEQA as an emergency project, rather than under one of the various categorical exemptions provided in CEQA (SCAQMD 2001). Because of these concerns expressed by SCAQMD, Energy Commission staff have prepared this alternatives analysis for the district's use, and the use of the Commissioners in making their decision whether to grant a permit to this project.

ALTERNATIVE ANALYSIS CRITERIA

In preparing this analysis, staff has followed the normal procedures it follows in non-emergency siting cases. The "Guidelines for Implementation of the California Environmental Quality Act" (CEQA), Title 14, California Code of Regulations Section 15126.6(a), provide direction by requiring an evaluation of the comparative merits of "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project." In addition, the analysis must address the "no project" alternative (Cal. Code Regs., tit. 14, §15126.6(e)).

The range of alternatives is governed by the "rule of reason" which requires consideration only of those alternatives necessary to permit informed decision-making and public participation. CEQA states that an environmental document does not have to consider an alternative of which the effect cannot be reasonably ascertained and of which the implementation is remote and speculative. (Cal. Code Regs., tit. 14, §15125(d)(5).) However, if the range of alternatives is defined too narrowly, the analysis may be inadequate. (City of Santee v. County of San Diego (4th Dist. 1989) 214 Cal. App. 3d 1438.)

To prepare this alternatives analysis, staff used the following methodology:

- Identify the basic objectives of the project.
- Identify and evaluate alternatives to the project. The principal project alternatives examined that do not require the construction of a natural gas-fired facility are increased conservation and the construction of alternative technologies (e.g. wind, solar, or geothermal).

- Identify and evaluate alternative locations or sites.

- Evaluate the impacts of not constructing the project (the "no project" alternative).

DETERMINING THE SCOPE OF THE ALTERNATIVES ANALYSIS

The purpose of staff's alternatives analysis is to provide the Energy Commission and SCAQMD with a reasonable range of feasible alternatives which could substantially reduce or avoid any potentially significant adverse impacts of the proposed project. To accomplish this, staff must determine the appropriate scope of analysis. Staff has evaluated the proposed project, and determined that the project, with the mitigation measures proposed by the applicant and the Conditions of Certification proposed in the Staff Assessment, will not result in any significant impacts. For this reason, staff has limited the depth of analysis of alternatives to the proposed project.

BASIC OBJECTIVES OF THE PROJECT

This project was proposed under the Emergency Permitting process developed by the Energy Commission in response to the Governor's Executive Orders D-26 and D-28. Those orders directed the Commission to expedite the processing of applications for peaking power plants that can be online by September 30, 2001. Considering these orders, and after studying the applicant's application, staff has determined the objectives of the Baldwin Hills Energy Facility No.1 to be:

- to help reduce probability that the electricity supply shortage will continue to cause rolling blackouts throughout California affecting millions of Californians;

- to supply electricity on demand during periods of peak demand into the Los Angeles electric transmission system area beginning September 30, 2001;

- to expedite timely completion of the project and to minimize project impacts by locating near key infrastructure, such as transmission line interconnections and supplies of process water and natural gas; and

- to expedite permitting by having appropriate land use designations and lack of fatal flaws.

PROJECT DESCRIPTION AND SETTING

A more complete description of the project and its setting is provided in the Staff Assessment.

POWER PLANT

The proposed Baldwin No. 1 project is a 53 MW simple-cycle power plant located one-half mile north of Stocker Street and 400 feet east of La Cienega Boulevard, in the County of Los Angeles. Up to 12 MW of the power from this project would serve the existing Stocker Resources gas processing facility. The proposed project consists of two GE LM 2500 natural gas-fired combustion turbines and associated equipment.

The final emissions control configuration will include steam injection utilizing heat recovery steam generators (HRSG) and a Selective Catalytic Reduction (SCR) system to reduce NO_x emissions to 2.5 ppm, and an oxidation catalyst to reduce carbon monoxide emissions to 4 ppm and volatile organic compound emissions to 1.4 ppm. These catalyst systems are needed to meet the Best Available Control Technology (BACT) requirements, though the project is expected to be allowed to initially operate without these systems for a period of months to allow the project to be online sooner. During the initial operation period, which will extend no later than June 1, 2002, the project will use water injection to reduce NO_x emissions to 25 ppm. The SCR emission control technology, when installed, will require the storage and use of aqueous ammonia. Aqueous ammonia will be transported to the site in California Department of Transportation (DOT) regulated vehicles and stored onsite in a 5,000 gallon steel storage tank installed with secondary containment.

A PDF file showing the regional location of this facility is included as **Figure 1** in the Staff Assessment. A project vicinity map, **Figure 2**, as well as a site plan for the proposed facility are also available. These files may be downloaded from the project's web site at: http://www.energy.ca.gov/sitingcases/peakers/baldwin/documents

NATURAL GAS SUPPLY

The Baldwin Hills Energy Facility No. 1 will connect to an existing SoCalGas natural gas pipeline within the Inglewood Oilfield.

TRANSMISSION INTERCONNECTION

The Baldwin Hills Energy Facility No. 1 will connect to the transmission grid through the existing 69 kilovolt (kV) overhead lines that run on the east side of La Cienega Boulevard, which is adjacent to the project site. New overhead lines will be run approximately 300 feet to connect the existing lines along La Cienega to the plant's switchyard.

RAW WATER SUPPLY

The Baldwin Hills Energy Facility No. 1 will include two GE-LM-2500 gas turbine engines that will consume approximately 340 gallons per minute (gpm) of water during peak operating times. Water will be required for both evaporative inlet air cooling and combustion chamber cooling. Fresh water will be supplied to the project by the

California-American Water Company through the existing Inglewood Oilfield water system interconnection located on site. The water will be treated using a portable, trailer-mounted demineralization process before water and steam injection into the turbines. See the **SOIL AND WATER** section of the Staff Assessment for detailed information regarding uses of water by the project.

WASTEWATER DISPOSAL

Wastewater from the demineralization and generating processes will be commingled with the brackish water produced at the Oilfield and sent to the existing onsite treatment facility. Treated water will then be reinjected into the Oilfield via Class II injection wells regulated by the California Division of Oil, Gas, and Geothermal Resources (DOGGR) Underground Injection Control program (UIC). See the **SOIL AND WATER** section of the Staff Assessment for detailed information regarding wastewater generation and disposal by the project.

POTENTIAL SIGNIFICANT ENVIRONMENTAL IMPACTS

Staff has evaluated the proposed project and determined that the project, with the mitigation measures proposed by the applicant and the Conditions of Certification proposed by staff, does not result in any significant impacts. In the emergency permitting process, Energy Commission staff have relied on the local air districts and the California Air Resources Board (CARB) for analysis of environmental and public health impacts from air emissions associated with these projects. Because SCAQMD has not yet released its analysis of this project, Energy Commission staff have not yet been able to evaluate the potential impacts from the project's air emissions.

ALTERNATIVES TO THE PROJECT

TECHNOLOGY ALTERNATIVES

NEW GENERATION

On January 17, 2001, the Governor proclaimed a state of emergency to exist due to the energy shortage in the State of California. In February, the California Energy Commission estimated that, if California experiences high temperatures this summer, the State's electricity needs would exceed supply by as much 5,000 megawatts (MW). In response to this concern, Governor Davis declared an energy emergency on January 17, 2001, and issued several Executive Orders on February 8, and March 7, 2001, to augment existing generation and develop new generation for this summer until new large power plants are online. His plan included accelerating the construction of recently approved power plants, increasing the output of and restarting existing power plants, and developing new peaking power plants. These projects represented a total goal of 5,000 MW of additional generation and included 1,133 MW of ISO simple-cycle

power plants and 1,000 MW of new simple-cycle projects. To date, 948 MW of ISO projects have been permitted, including 354 MW approved by the Energy Commission. In addition, the Commission has approved 552 MW of additional simple-cycle projects for 2001.

CONSERVATION

One alternative to a power generation project could be programs to reduce energy consumption. These programs are typically called "energy efficiency," "conservation," or "demand side management" programs. One goal of these programs is to reduce overall electricity use; some programs also attempt to shift such energy use to off-peak periods.

The Energy Commission is responsible for several such programs, the most notable of which are energy efficiency standards for new buildings and for major appliances. The California Public Utilities Commission supervises various energy efficiency programs administered by the investor-owned utilities, and many municipal electric utilities have their own demand side management programs. The combination of these programs constitutes the most ambitious overall approach to reducing electricity demand administered by any state in the nation.

In response to the high electricity prices and power outages, the California Legislature passed and Governor Gray Davis signed Assembly Bills 970 (August 2000), and Assembly Bill 29X and Senate Bill 5X (April 2001). These bills provide, among other programs, funding to the California Energy Commission for grants to reduce electricity peak load demand.

An **on-line, searchable database** listing all rebates currently available with links to more information at: www.consumerenergycenter.org/rebate/. A summary of all the SB 5X and AB 29X funding can be found at: www.flexyourpower.ca.gov/rebates/. The funding for peak load reduction under these two bills total more than $850 million.

These programs provide another part of the attempt by the state to address the current emergency. As such, they complement the program for developing new generation sources rather than serve as an alternative.

GENERATION TECHNOLOGY ALTERNATIVES

Staff compared various alternative technologies with the proposed project, scaled to meet the project's objectives and time frame. Technologies examined were those principal electricity generation technologies that do not burn fossil fuels such as geothermal, solar and wind. Each of these technologies could be attractive from an environmental perspective because of the absence or reduced level of air pollutant emissions. These alternatives are not feasible to provide 53 MW of new generation by September 30, 2001.

Solar and wind resources require large land areas in order to generate 53 megawatts of electricity. Specifically, utility scale solar thermal projects require between four and ten acres per megawatt depending on the type of system (parabolic trough, parabolic dish, or central receiver) (CEC 1996, pp. B.15.1-2). A project comparable to the proposed 53 megawatt Baldwin Hills Energy Facility No. 1 would require a minimum of 200 acres, or more than 100 times the amount of space taken by the proposed project. Wind generation "farms" generally require about 17 acres per megawatt, with 53 megawatts needing more than 900 acres, more than 450 times the amount of space taken by the proposed plant site (CEC 1996, pp. B.16.1).

Solar and wind technologies have the potential for significant land use impacts due to the large land areas required. Limited land is available for immediate solar or wind energy development in the Los Angeles Area. Additional solar and wind generation capacity is feasible in Southern California, and is likely to be developed in the short term. However, staff is unaware of any large scale solar or wind facility currently planned to be built in the immediate Los Angeles Area. Such projects involve land use issues that could limit the size and feasibility of such alternative generation sources, and could affect the timing of such facilities becoming available if they were proposed. In addition, a key objective of this project is to supply electricity on demand during periods of peak demand in the Los Angeles electric transmission system area beginning September 30, 2001. Solar and wind power projects are also less effective as on-demand peak generators because of their dependence on weather conditions. Therefore, such facilities do not provide a feasible alternative to the proposed project.

Geothermal resources are available in limited areas of California, including the near the Salton Sea in Imperial County (CEC 2000). No significant geothermal resources are available in the immediate Los Angeles area. While development of additional geothermal resources in California is possible, geothermal power is not a feasible alternative to the proposed project.

SITING AND RELATED FACILITIES ALTERNATIVES

POWER PLANT SITING ALTERNATIVES

La Jolla's primary objective for developing the Baldwin Hills Energy Facility No.1 is to be able to provide electrical generation capacity to the Los Angeles electric transmission system area during times of peak demand starting September 30, 2001. To allow La Jolla to meet this objective, alternative sites would need to be immediately available for development, provide ready access to a means to connect to the electrical transmission grid and to sources of adequate natural gas and water.

In response to Executive Order D-26, the Energy Commission identified numerous potential sites throughout California to interconnect temporary peaking power plants (CEC 2001). To conduct this study, the Energy Commission staff identified seven categories of potential sites. These included:

- Existing power plant and substation sites -- sites that currently have operating power plants or transmission substations that could accept additional generation and be on-line by the summer 2001.

- Developer proposed sites -- sites under consideration by power plant developers that could have schedules accelerated or capacity increased for this summer.

- Oil and gas industry sites -- sites currently used in association with oil development or refinery activity, which were developed from responses to a survey of oil and gas company representatives conducted by the Resources Agency in late January 2001.

- Past application sites – sites previously evaluated by the Energy Commission while reviewing Applications for Certification that were either not developed or identified as alternatives to those proposals; these sites were analyzed from the data available at the Energy Commission and updated with respect to land use changes and other site information.

- Local government sites -- sites local governments have identified for potential power plant development.

- State owned sites -- sites owned by the State of California and managed by a number of State agencies where information on site characteristics was readily available.

- Federal government sites -- sites located on Department of Defense lands or lands managed by other federal agencies where information on site characteristics was readily available.

The preliminary site screening focused on developing 50 to 100 MW natural gas-fired peaking power plants on the potential sites. Peaking power plants require a small amount of land (1 to 2 acres), little, if any, water supplies, and can be constructed in a relatively short time (60 to 120 days for a temporary facility, or 90 to 180 days for a larger permanent facility). Current peaking power plant technology results in low emissions that can be offset through air pollution control district emission offset or mitigation banks. Since the primary purpose of these facilities is to provide electricity and greater system reliability in the major electricity load centers during periods of high demand, these relatively small power plants can be dispersed over a number of sites in a manner that is more compatible with surrounding land uses, protects public health and safety, and maintains environmental quality.

Staff used the following a two-level screening analysis. The first level in site screening was based on identifying sites located in or near the areas that would benefit from additional peaking facilities this summer. Using this criteria, the staff screened over 400 potential sites in all of the site categories down to a more manageable 140 potential sites located in the critical areas.

The second level in site screening was based on site characteristics that were considered vital to developing a peaking power plant at a site by this summer. These criteria included the following:

- Sufficient land (2 acres or more) to accommodate a peaking power plant of 50 MW or greater.

- Adequate transmission capacity at or near the site -- this requires at least 60kilovolts (kv) transmission facilities at or near the site, but 115kv or greater is preferred.

- Adequate natural gas fuel supply at or near (within 1 mile) of the site.

- Availability of emissions offsets in the area -- this factor along with Best Available Control Technology (BACT) requirements will be critical in matching turbines to a site since each air district may treat offsets and BACT differently.

- Lack of known or potential fatal flaws in using the site – this included significant land-use restrictions, close proximity of sensitive receptors such as hospitals, or endangered species.

Of the 140 potential sites identified in the preliminary screening, 32 sites were identified in the Commission's February, 2001, report to the Governor as meeting these second level site screening criteria (CEC 2001). The Stocker Resources Inglewood Oil facility was among those 32 sites.

Based on this prior assessment of potential peaking plant sites and the need to develop a large number of new peaking power plants to address the emergency, staff finds that the proposed site is among the most suitable in California for this type of project. In addition, any attempt to move the project to another site at this date would make it exceedingly unlikely that the project could be online by September 30, 2001, as required under the emergency permit process.

RELATED FACILITIES ALTERNATIVES

For the Baldwin Hills Energy Facility No.1, La Jolla proposes to connect to the existing services both adjacent to and within the Inglewood Oilfield and project site for natural gas, transmission interconnection, raw water supply, and wastewater disposal. Connecting to these services at the proposed location minimizes the length of linear facilities such as pipelines or transmission lines associated with the project, and helps the project meet its objective of being online by September 30, 2001. Staff does not consider alternatives for these related facilities to be feasible.

In the emergency permitting process, Energy Commission staff have relied on the local air districts and the CARB for analysis of environmental and public health impacts from air emissions associated with these projects. Because SCAQMD has not yet released its analysis of this project, Energy Commission staff have not yet been able to evaluate

the potential impacts from the project's air emissions. Staff leaves consideration of alternative air pollution control alternatives to SCAQMD and CARB.

ALTERNATIVE-SIZED PROJECTS

Staff considered other size natural gas fired, simple-cycle projects as potential alternatives. The proposed project includes two LM 2500 combustion turbines to generate 53 MW. A smaller project, such as using a single LM 2500, would lower the air emissions from the project but would otherwise result in similar impacts based on the project foot-print and linear facilities and in terms of the potential for land use conflicts. The smaller project would provide less benefit in terms of its ability to add to the state's ability to meet the current emergency. The project would also no longer come under the Energy Commission's jurisdiction, and it is not clear whether or not the applicant would choose to pursue the project under those circumstances. A larger project, either using more LM 2500 turbines or using larger turbines, would be more difficult to bring on line by September 30, 2001, and so might not qualify for the emergency permitting process. Site constraints might also limit the ability of the applicant to develop a significantly larger project at the site. For these reasons, staff considers the proposed project to be preferred to similar projects that are either significantly smaller or larger.

THE "NO PROJECT" ALTERNATIVE

CEQA Guidelines and Energy Commission regulations require consideration of the "no project" alternative. This alternative assumes that the project is not constructed, and is compared to the proposed project. A determination is made whether the "no project" alternative is superior, equivalent, or inferior to the proposed project.

If the proposed project is not licensed, new air emissions from the project will be avoided. The existing 2 acre area where the facility would be built would remain is use as part of the existing oilfield, although the potential exists for it to be otherwise developed. In addition, 53 megawatts of peaking capacity would not be added to the area's generation capacity, and regional electrical grid reliability would be lower. The possibility of load shedding, power interruption, and even regional blackouts would be higher. Load interruption has its own environmental consequences, including higher air emissions from small-scale backup generators, which are normally diesel-fired. Load shedding and blackouts lead to public health and public safety hazards that can increase both accidents and overall mortality.

The project will be required to comply with all air quality requirements of the SCAQMD. The district's rules and regulations are designed to protect the public health of the most sensitive members of the public. Staff has not identified any unmitigated significant impacts resulting from the proposed project, though staff is waiting to review any impacts relating to air emissions identified in SCAQMD's analysis. Staff finds that the requirement that the power plant close no later than the oil fields close to provide assurance that the proposed project will not interfere with the planned development of the Baldwin Hills Park.

The project also offers economic and electric benefits. Project construction and operation would have a small beneficial impact on both the study area's economic base and fiscal resources through employment of both local and regional workers, as well as through the purchases of local and regional construction materials. The project would also provide additional electrical generation capacity at times of peak demand. For these reasons, staff prefers the proposed project to the "no project" alternative.

CONCLUSIONS AND RECOMMENDATION

Staff has determined that the proposed site is preferred to the "no project" alternative. Staff does not believe that conservation measures and alternative technologies (solar, wind, and geothermal) present feasible alternatives to the proposed project. Staff has determined that the project is proposed for a site that was found to be among those appropriate for a peaking power plant in a statewide review conducted in February 2001. Staff has also found, that with the proposed Conditions of Certification, the proposed project will not result in any unmitigated significant impacts. For these reasons, staff concludes that the proposed project is the preferred alternative.

REFERENCES

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